Claims:

1. A system for data processing, comprising:

a classical data interface configured to receive data from a classical computing environment;

a data encoding module configured to encode the received data into a format compatible with a quantum computing environment;

a task scheduler configured to determine, based on a type of a language processing task to be performed on the received data and on a capability of quantum hardware available in the quantum computing environment, an algorithm for the language processing task from a plurality of candidate algorithms comprising at least two quantum algorithms;

a quantum processing module within the quantum computing environment configured to process the encoded data using the determined algorithm;

a communication interface configured to transfer the encoded data to the quantum computing environment and retrieve the processed data from the quantum computing environment; and

a data decoding module configured to decode the processed data into a format compatible with the classical computing environment.

2. The system of claim 1, wherein the data encoding module is further configured to transform the received data into a structured dataset that is compatible with a metadata standard.

3. The system of claim 2, wherein the structured dataset that is compatible with a metadata standard corresponds to an ISO 11179 compliant JSON representation.

4. The system of any one of the preceding claims, wherein the quantum processing module is configured to use at least one quantum algorithm selected from a group comprising of quantum support vector machines (QSVMs) and quantum neural networks (QNNs).

5. The system of any one of the preceding claims, wherein the task scheduler is configured to allocate tasks between the classical computing environment and quantum computing environment based on at least one of the following criteria: complexity of the data, suitability of processing requirements for quantum or classical computation, and available computational capacity in both computing environments.

6. A method for data processing, comprising:

receiving data from a classical computing environment;

encoding the received data into a format compatible with a quantum computing environment using a data encoding module;

determining, based on a type of a language processing task to be performed on the received data and on a capability of quantum hardware available in the quantum computing environment, an algorithm for the language processing task from a plurality of candidate algorithms comprising at least two quantum algorithms;

transferring the encoded data to the quantum computing environment;

processing the encoded data in the quantum computing environment using a quantum processor using the determined algorithm;

retrieving the processed data from the quantum computing environment; and

decoding the processed data into a format compatible with the classical computing environment using a data decoding module.

7. The method of claim 6, wherein the decoded processed data is further integrated into downstream applications in the classical computing environment.

8. The method of claim 6 or 7, further comprising applying a plurality of task scheduling algorithms within the quantum computing environment based on characteristics of quantum processors.

9. The method of any one of claims 6-8, wherein the encoded data transferred to the quantum computing environment and the processed data decoded for the classical computing environment are both in a structured data format that is compatible with a metadata standard.

10. The method of any one of claims 6-9, wherein the method is implemented as part of a hybrid quantum-classical computing system that supports a hardware-agnostic abstraction layer which allows the computing system to interact with a plurality of quantum processors.